

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
APPLICATION FOR UNITED STATES LETTERS PATENT**

**CONFORMABLE RESISTANCE TRAINING DEVICE**

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## **CONFORMABLE RESISTANCE TRAINING DEVICE**

### **CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] None.

### **STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

[0002] Not applicable.

### **REFERENCE TO A MICROFICHE APPENDIX**

[0003] Not applicable.

### **FIELD OF THE INVENTION**

[0004] This invention relates generally to exercise equipment, and, more particularly, to a conformable device for performing a broad range of resistance training exercises.

### **BACKGROUND OF THE INVENTION**

[0005] People engaging in fitness activities have many options. One of the challenges in staying fit is finding the time and, depending on the type of activity desired, necessary resources to fulfill one's fitness goals. In particular, if training with weights or other resistance training is desirable, access to proper equipment is often a challenge. A gymnasium providing the proper equipment may or may not be available. Plus, membership at such a gym is often cost prohibitive. Space and cost may also be prohibitive to investing in exercise equipment for the home. Another impediment to a regular exercise routine may be travel, particularly for frequent business travelers.

[0006] Of those interested in resistance training, many are not interested in training with heavy weight equipment. Examples include those rehabilitating injuries or handicaps, or those interested

in minimizing overall stress to joints, such as older adults. For this group as well, availability of the appropriate equipment may be prohibitive to proper exercise. They may be even less inclined to invest in a membership at a gymnasium where the emphasis is generally on heavier weight training and higher impact exercise. In addition, smaller rehabilitation facilities and exercise centers often do not have the equipment necessary to provide a full range of lower impact exercise options.

[0007] Thus, a need exists for a resistance training device that is inexpensive, convenient, provides low stress to joints, and provides a full range of exercise options.

## **SUMMARY OF THE INVENTION**

[0008] Provided is a resistance training device including a conformable base and one or more resistance arms that are affixed to the conformable base. The conformable base is malleable such that it may conform to the contour of a user's body as the user gets into position and executes an exercise. The conformable base may support the weight of a user. A plurality of resistance training exercises are executable. In an embodiment, one or more resistance arms may provide multiple levels of resistance for each resistance training exercise. In another embodiment multiple levels of resistance may be achieved by employing multiple resistance arms of varying strengths. In another embodiment, multiple levels of resistance may be achieved by employing multiple resistance arms of similar strengths.

[0009] A method is provided including positioning a conformable base having one or more affixed resistance arms and exercising one or more body parts via manipulation of the one or more affixed resistance arms. In embodiments, the one or more body parts may include one or more muscle groups, connective tissues, or any body part needing rehabilitation. In another embodiment, the method further includes executing a plurality of resistance training exercises with

the conformable base having one or more affixed resistance arms. In another embodiment, the method further includes providing multiple levels of resistance with the one or more affixed resistance arms for each resistance training exercise.

[0010] A method of rehabilitation is provided including positioning a conformable base having one or more affixed resistance arms and exercising one or more body parts in a manner that promotes wellness. In an embodiment, the method of rehabilitation further includes providing multiple levels of resistance with the one or more affixed resistance arms.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0011] Fig. 1 illustrates a perspective view of an embodiment of a resistance training device including resistance arms affixed to a conformable base.

[0012] Fig. 2 illustrates a perspective view of an embodiment of a resistance training device including a conformable base and resistance arms affixed to a conformable base where the resistance arms may possess different strengths.

[0013] Fig. 3 illustrates a cross-sectional view of an embodiment of a resistance training device including resistance arms attached to a conformable base within a concavity.

[0014] Fig. 4 illustrates a perspective view of an embodiment of a resistance training device including resistance arms attached to a conformable base via sewing or stitching.

### **DETAILED DESCRIPTION OF THE INVENTION**

[0015] The resistance training device provided includes a conformable base and one or more resistance arms that are affixed to the conformable base. The conformable base (or “base”) provided herein is malleable such that it may conform to the contour of a user’s body as the user gets into position and executes an exercise. In an embodiment, the conformable base supports the

weight of a user. The conforming or fitting nature of the conformable base may maximize support, reduce stress on joints and connective tissues directly and indirectly involved in an exercise, and strengthen supportive lower back and abdominal muscles.

[0016] The conformable base may be constructed of any malleable material that is suitable for construction of the resistance training device described herein. Typically, flexible plastics, foams, and rubbers are appropriate. In embodiments, the conformable base may be made up of materials including polyvinyl chloride (PVC), latex, natural or synthetic or butyl rubber, elastomer, vinyl, nylon, fabric, foam, neoprene, solid foam rubber, plastic, foam PVC, or combinations thereof.

[0017] The base may take any shape that is suitable for permitting a user to perform resistance training exercises as provided herein. In an embodiment, the conformable base is spherical. In another embodiment, the conformable base is inflatable. The malleable and possibly inflatable nature of the base allow it to conform as necessary during use or for storage purposes. In another embodiment, the conformable base is an exercise ball, such as may be available from many common sporting goods and retail stores, e.g., Wal-Mart or Target, and manufacturers such as United States Plastic Corp. of Lima, Ohio, or Ledragomma of Italy.

[0018] One or more resistance arms are affixed to the conformable base. In an embodiment, resistance arms provide the resistance that allows a user to perform resistance training exercises. In another embodiment, the resistance arms are elastic. In another embodiment, elasticity allows the resistance arms to be lengthened or stretched. In another embodiment, the one or more resistance arms may include one or more degrees of elasticity. In another embodiment, the exertion of strength by a user in order to stretch or lengthen one or more resistance arms is the mode of resistance training provided herein. In another embodiment, the one or more resistance arms are removable. In another embodiment, the one or more resistance arms may include one or

more lengths. In another embodiment, the one or more resistance arms provide more than one range of motion.

[0019] Resistance arms may be constructed of one or more materials suitable for assembling the resistance training device provided. In embodiments, the resistance arms may be made up of materials including natural rubber, synthetic rubber, rubber latex, plastic, elastomer, nylon, foam, Velcro, and combinations thereof.

[0020] Fig. 1 illustrates a view of an embodiment of a conformable resistance training device where resistance arms 100 are affixed to a conformable base 110. In an embodiment, the one or more resistance arms 100 provide multiple levels of resistance for each resistance training exercise. A user may position the conformable base 110 and his or her body relative to the base 110 such that the resistance arms 100 may be gripped by or attached to the user and appropriate movements for resistance training may be executed.

[0021] The ability to achieve multiple levels of resistance may be desirable in order for a user to more thoroughly perform resistance training. A reason multiple levels of resistance may provide for a more thorough exercise routine is because larger muscle groups, such as pectorals, in order to achieve similar results, typically require greater resistance than smaller muscle groups, such as triceps. Another reason multiple levels of resistance may provide for a more thorough exercise routine is because employing varying levels of resistance when training the same muscle group may stimulate/encourage greater strength, overall wellness, and/or rehabilitation than perpetually employing the same level of resistance. For example, if performing resistance training for pectorals including multiple sets of the same exercise, employing more than one level of resistance may provide for more thorough exertion and greater resulting strength, wellness, and/or rehabilitation in the pectorals.

[0022] In an embodiment, multiple levels of resistance are achieved by employing one or more resistance arms of varying strengths. An example of an exercise routine where resistance arms of different strengths are employed may be illustrated by referring to Fig. 2. Assume the resistance arms marked "X," "Y," and "Z" each possess a different strength or level of resistance. Such strength/resistance may be expressed in units of force. Assume X is a 5 unit of force arm, Y is a 10 unit of force arm, and Z is a 20 unit of force arm. As used herein, a unit of force may be a weight unit, such as, for example, pounds, kilograms, or stones. If a user desires to exercise the bicep muscle of the arm, s/he may first perform curling exercises for biceps using X for 20 repetitions. In a subsequent set, the user may switch to curling with Y for 20 repetitions, an increase of 5 units of force (e.g., pounds), in order to further exert the bicep. The user may then switch to curling with Z for 20 repetitions, an increase of 10 units of force over Y, in order to still further exert the bicep.

[0023] In another example of achieving multiple levels of resistance by employing one or more resistance arms of varying strengths, a user may perform curling exercises for biceps employing both resistance arms X and Y at the same time to achieve a resistance of 15 units of force. If increasing the amount of resistance in subsequent sets, the user may employ resistance arms X and Z at the same time to achieve a resistance of 25 units of force. Any number of resistance arms of differing resistances may be employed, thus making it possible to achieve any number of resistance levels.

[0024] In another embodiment of the resistance training device, multiple levels of resistance are achieved by employing one or more resistance arms of similar strength. For example, referring again to Fig. 2, resistance arms X, Y, and Z may be assumed to possess similar strength. A user may perform biceps curls using X for 20 repetitions. Then, the user may employ all of X, Y, and Z while performing bicep curls in order to increase resistance and further exert the bicep muscle.

Any number of resistance arms of similar resistance may be employed, thus making it possible to achieve any number of resistance levels.

[0025] The resistance arms may be affixed to the conformable base any number of ways. In an embodiment, the one or more resistance arms are affixed to the conformable base in one or more positions. In another embodiment, the one or more resistance arms are affixed within a concavity. Fig. 2 illustrates a view of an embodiment where multiple resistance arms X, Y, and Z are affixed to a conformable base 300 within a concavity 320. In an embodiment, the resistance arms are affixed to the conformable base at a point within the concavity. Fig. 3 is another illustration of an embodiment where multiple resistance arms 400 are affixed to a conformable base 410. The illustration of Fig. 3 includes a cross-sectional view of a concavity 420 where the resistance arms 400 are affixed at a point 430. In the embodiment illustrated by Fig. 3, the point 430 is a bar.

[0026] In an embodiment, the one or more resistance arms are affixed to the surface of the conformable base. The resistance arms may be affixed to the conformable base in any manner known in the art. In an embodiment, the one or more resistance arms are affixed to the surface of the conformable base via sewing or stitching. Fig. 4 illustrates an embodiment of a resistance training device including a conformable base 200 and one or more resistance arms 220, 230. The one or more resistance arms 220, 230 are attached at one or more positions 215, 225, and 235 on the conformable base 200. In this embodiment, the resistance arms 220, 230 are affixed to the surface of the conformable base via sewing or stitching.

[0027] In order to execute resistance training exercises, a user may grip the one or more resistance arms, or the user may otherwise attach the one or more resistance arms to the user's body. In the embodiment illustrated by Fig. 2, each of the one or more resistance arms forms a loop that may be gripped by a user. In another embodiment, the one or more resistance arms



include one or more handles, which may be detachable. In another embodiment, the one or more detachable handles are designed such that one or more resistance arms may be attached to one handle, which allows the level of resistance to be varied. In another embodiment, a fixture, such as a strap, concavity, or other attachment, permits use of one or both of a user's feet in execution of resistance training. In another embodiment, the fixture is removable. In another embodiment, a loop or loops formed by the one or more resistance arms, or some other form of handle or fixture, is fitted over, around, or otherwise secured to a user's body, such as, for example, the wrist, ankle, neck, or foot.

[0028] The conformable base and one or more resistance arms allow a user to perform a plurality of resistance training exercises. In an example illustrated by referring to Fig. 4, the conformable base 200 is a soft, inflatable ball, the one or more resistance arms 230 are attached at one position 235, and a user desires to exercise her/his pectoral muscles with a pressing movement. The user may position the base 200 on a floor such that the attachment position 235 is against the floor. The user may then position her/himself such that the bulk of her/his weight is on the base 200, with her/his back against the base and her/his feet flat on the ground, so that s/he is lying on the base 200. S/he may then grasp the one or more resistance arms 230 and perform pressing movements that exert the pectoral muscles. In this example, the one or more resistance arms 230 are attached at the position 235, which is on the bottom side of the base 200 in contact with the floor. The pushing movements would stretch the one or more resistance arms 230 from the position 235 in contact with the floor, around the sides of the base 200 in a vertical direction. The soft, malleable nature of the base 200 causes it to conform to the weight and shape of the user's back, providing a safe and comfortable exercise surface. The user's feet on the floor balance the user on the base.

[0029] In another example illustrated by referring to Fig. 4 where the conformable base 200 is again a soft, inflatable ball, and the one or more resistance arms 230 are attached at one position 235, a user may desire to exercise her latissimus dorsi muscles with a pulling movement. The user may position the base 200 against a wall such that the attachment position 235 is against the wall. The user may then sit on the floor and position her feet against the base 200 so that her feet are pressing the base 200 against the wall. The user may then grasp the one or more resistance arms 230 and perform pulling movements that exert the latissimus dorsi. In this example, the pulling movements would stretch the one or more resistance arms 230 around the sides of the base 200 in a horizontal direction.

[0030] The resistance training device described herein may be small enough and light-weight enough that it may be conveniently stored and transported. In an embodiment, the resistance training device is portable. The ability to be inflated and deflated may allow the conformable base and resistance training device as a whole to be light and easily moved. In its deflated state the device may be small enough and malleable enough to be folded and/or squeezed into a small space for storage, such as, for example, a closet or even a suitcase or other carrying case. When use is desired, the inflatable device may be removed from its storage space and inflated, such as by blowing air from a user's mouth. As an example, a business traveler may store the device among luggage and thereby have access to a full range of resistance exercises and multiple levels of resistance in a hotel room. If it makes sense for storage and/or transportation purposes, the one or more resistance arms may be detached while the device is stored and reattached as needed for exercise. In another example, a user desiring a flexible home gym but lacking the space or desire for the decorative look associated with typical gym equipment may inflate the device when

exercise is desired and deflate the device for convenient and inconspicuous household storage, such as in a closet, or under a bed.

[0031] In embodiments, the conformable base may be positioned such that a plurality of resistance training exercises may be executed. Various positions of the conformable base provide for appropriate manipulation of the resistance arms in order to exercise a particular body part. The plurality of resistance training exercises includes movements common in the areas of resistance training and rehabilitation, and because of the versatility of the resistance training device a user is only limited by his or her imagination. More than 75 resistance training movements may be executed. Examples of such resistance exercises include seated shoulder press, bench press, seated wrist flexion, tricep kickback, hip abduction, leg curl, ankle inversion, squat, and row. Typically, the particular positioning of the conformable base and particular resistance training exercises are selected according to the one or more body parts that a user desires to exert. In an embodiment, the one or more body parts include one or more muscle groups. In another embodiment, the one or more body parts include one or more connective tissues, such as, for example, tendons and ligaments. In another embodiment, the one or more body parts include body parts needing rehabilitation, such as after an injury, after surgery, or for a handicap.

[0032] In an embodiment, a method of rehabilitation is provided by the present application. Rehabilitation may be accomplished by positioning a conformable base having one or more affixed resistance arms such that exercises promoting wellness may be performed for one or more body parts. Such rehabilitation may include treatment of an injury or improving the wellness of any particular body part that is less than healthy. Body parts needing rehabilitation may include one or more muscle groups, connective tissues, and/or joints.

[0033] The resistance training device provided offers many advantages. The device is relatively inexpensive, safe, light weight, minimizes impact on bodily joints, does not occupy much space, and provides a method of performing a broad spectrum of resistance training exercises with the ability to achieve multiple levels of resistance.

[0034] The particular embodiments disclosed herein are illustrative only, as the invention may be modified and practiced in different but equivalent manners apparent to those skilled in the art having the benefit of the teachings herein. Furthermore, no limitations are intended to the details of construction or design herein shown, other than as described in the claims below. It is therefore evident that the particular embodiments disclosed above may be altered or modified and all such variations are considered within the scope and spirit of the invention. Accordingly, the protection sought herein is as set forth in the claims below.